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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Before The
Federal Communications Commission
Washington, D.C. 20554

In the matter of:	)	
Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems	)	ET Docket No. 00-258

To: The Commission

COMMENTS OF NETWORK FOR INSTRUCTIONAL TV, INC.

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SUMMARY

Network for Instructional TV, Inc. ("NITV") strongly opposes any change in the frequencies allocated for Instructional Television Fixed Service ("ITFS") and Multipoint Distribution Service ("MDS"). Segmentation or relocation of the ITFS spectrum, or disaggregation of the ITFS and MDS frequencies, will undermine NITV's and other ITFS educators' partnerships with commercial wireless operators, denying educators the resources to continue their existing services to students and teachers and preventing cost-efficient and widespread use of high-speed educational broadband services provided using the current ITFS and MDS spectrum.

NITV is a non-profit corporation established in 1979 with the mission of increasing the distribution of educational technologies to K – 12 students and teachers, especially those in underserved urban or rural areas. NITV accomplishes its mission through its network of twenty-three (23) ITFS stations, which serve fifty-seven (57) school districts in twenty-two (22) cities. With the technical assistance and funding of its commercial wireless partners, NITV facilitates and supports traditional video distance-learning and teacher and faculty training using its ITFS stations in close cooperation with local educators and is on the brink of providing wireless broadband educational services.

Like most ITFS licensees, NITV has entered into airtime lease agreements with commercial wireless operators whereby the commercial partner provides technical services and financial support in exchange for airtime capacity pursuant to the FCC's carefully-crafted ITFS leasing rules. These ITFS/commercial wireless partnerships have long been encouraged by the Commission as a means for commercial operators to acquire the capacity necessary to become a viable source of competition while educators are afforded the funding and technical expertise needed to operate their ITFS stations and provide educational services. Without partnerships with commercial wireless operators, NITV and other educators will not be able to provide existing educational services or effect the transition to digital broadband services.

Commercial fixed wireless broadband services are not feasible above 3 GHz or with less spectrum than the 2500 through 2690 MHz band allocated to ITFS and MDS stations. Accordingly, any disruption of the ITFS and MDS frequencies will eliminate the educational services provided via the ITFS frequencies.

These dire consequences for American education may be avoided. The Commission has identified ample spectrum outside of the 2500 - 2690 MHz band for the provision of 3G services, allocation of such spectrum will not breach any international commitment and recent indicators reveal that demand for 3G services may not even require spectrum in addition to existing mobile services allocations.

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COMMENTS OF NETWORK FOR INSTRUCTIONAL TV, INC.

Network for Instructional TV, Inc. ("NITV"), the licensee of twenty-three (23) Instructional Television Fixed Service ("ITFS") stations in communities throughout the United States, hereby submits its Comments in response to the Commission's *Notice of Proposed Rule Making and Order* ("*Notice*') in the above-captioned proceeding evaluating whether additional spectrum should be allocated for new advanced mobile and fixed wireless services, including Third Generation ("3G") mobile services.[1]

I. Introduction

NITV strongly opposes any change in the frequencies currently allocated for ITFS and Multipoint Distribution Service ("MDS") stations. As set forth below, the existing educational video and data services *and* potential of ITFS to deliver broadband educational services will be lost through segmentation or relocation of the ITFS spectrum, or disaggregation of the ITFS and MDS frequencies. The loss of existing ITFS services and soon-to-be-available broadband wireless educational services will thwart NITV's mission of serving underserved youth and teachers.

[1] NITV holds the following ITFS licenses: WLX-951, Anderson, IN; WLX-787, Baltimore, MD; WND-252, Bloomington, IN; WLX-278, Champaign, IL; WHR-883, Ft. Worth, TX; WFD-456, Indianapolis, IN; WHR-523, Kansas City, MO; WHR-514, Milwaukee, WI; WHR-513, New Orleans, LA; WHR-520, New York, NY; WLX-490, Nolanville, TX; WHR-525, Pittsburgh, PA; WHR-515, Portland, OR; WLX-291 and WLX-292, Saginaw, MI; WLX-874, San Antonio, TX; WLX-759, St. Louis, MO; WHR-518, Tampa, FL; WLX-486, West-Waco, TX; and WHR-461, Washington, D.C. Additionally, NITV's local educational affiliates hold WHR-790, Miami, FL (Southern Florida Instructional TV, Inc.), WNC-804 (Atlanta Educational Services, Inc.) and WHR-525 (Delaware Valley Educational Television Network, Inc.).

NITV presently provides educational programming and teacher training via its ITFS facilities and is poised to provide wireless broadband educational services.[2] Most ITFS licensees make some of their airtime capacity available to commercial operators in exchange for technical assistance and funding, pursuant to the FCC's rules. NITV is no exception. These commercial operators depend on the combined capacity of the leased ITFS frequencies and the MDS frequencies to serve customers within an approximate thirty-five (35) mile radius. The favorable signal propagation characteristics in this band cannot be duplicated in higher frequency bands. Recently, due to a carefully-crafted change in the FCC's rules to permit upstream and downstream licensing of ITFS and MDS facilities, major telecommunications providers have entered into agreements with ITFS licensees such as NITV in order to secure sufficient capacity to provide wireless broadband services.

NITV has long awaited the arrival of commercial partners with the technical expertise and funds to support educational use of its ITFS frequencies. NITV has spent over 20 years securing FCC authorizations for instructional facilities, cementing ties with its local educational affiliates and negotiating viable commercial partnerships to make its services available in schools and homes. Relocation, disaggregation or segmentation of the ITFS and MDS frequencies in the 2500 MHz to 2690 MHz band will give rise to the right of its commercial partners to terminate their relationships with NITV. Without a continuation of these partnerships, NITV's existing video and data services to underserved and rural students and teachers, and the ability to deliver broadband educational services to homes and businesses, will be lost.

In light of the huge loss of existing distance-learning services and potential new wireless educational broadband services that education would suffer upon reallocation, there are many reasons to doubt the need to disrupt the allocation of ITFS and MDS spectrum. The Commission already has allocated substantial amounts of spectrum for mobile and advanced services. NITV respectfully submits that the Commission should not sacrifice education and the advanced wireless digital broadband services that are on the brink of delivery throughout the U.S. by

[2] Applications are pending to provide two-way services in many of the markets where NITV operates and are subject to automatic grant by the FCC. *See* 47 C.F.R. Section 74.911 (d). Automatic grant will not occur if a timely challenge to an application is filed or the Commission notifies the applicant. *Id.*

major telecommunications players in competition to local telephone and cable companies in order to promote potential services that may or may not be embraced by U.S. consumers and *that do not enhance education.*

II. NITV's Numerous Successful Existing Services Will Cease If the ITFS Frequencies Are Segmented, Relocated or Disaggregated from the MDS Frequencies

A. NITV's Role as ITFS Licensee

Efforts to segment, relocate or disaggregate the ITFS frequencies from the MDS spectrum strike at the very heart of NITV's ability to meet local educational needs. NITV was established in 1979 as a "not-for-profit" company addressing primarily the educational technology needs of underserved, undertaught and minority K-12 populations, and the faculty that serve them. For twenty-one years, NITV has worked to increase the distribution and effectiveness of educational services and technologies for the improvement of education at the local level for all American youth, especially those in underserved urban or rural areas. The central means by which NITV accomplishes its mission is through utilization of its ITFS capacity. Through such utilization, NITV has forged relationships with fifty-seven (57) local school districts in twenty-two (22) cities in thirteen (13) states and the District of Columbia. Through its local educational affiliates, NITV services extend to more than 1 million youth in more than 1,400 classrooms.

To further its mission, NITV has established its VideoFirst Division, which offers a library of thirty-two (32) instructional video series, containing 390 curriculum-based programs. These programs are provided to NITV's affiliates at no cost.[3]

NITV also has been a leader in the development of online classroom resources through its TeachersFirst Division. This Division created the TeachersFirst website. This website can be

[3] NITV's ITFS Services Division manages the acquisition, construction and operation of the ITFS systems.

delivered and used via ITFS wireless broadband systems throughout the U.S. and has proven to be a valuable resource for teachers.

NITV, a Virginia non-profit corporation, is controlled and operated by a Board of Directors composed of school superintendents, leading school administrators and educators, as well as business and communications executives. These community leaders help ensure NITV is serving the needs of local educators.

NITV currently achieves its mission of providing technology and educational services in disadvantaged and rural areas by using its licensed ITFS frequencies to provide traditional distance-learning and teacher and faculty training to local educational affiliates, primarily local K-12 school systems. In the District of Columbia, for example, NITV has partnered with the public school system ("DCPS") since 1986 to provide two daily channels of video programming to elementary and high school students. [4] The ITFS network NITV makes available to DCPS now reaches from the District's Penn Center media facility to seventy-eight (78) of the system's approximately 164 schools.[5] DCPS utilizes NITV's frequencies for a great variety of educational purposes, including educational programming from NITV's VideoFirst and other national curriculum libraries, special events and professional development seminars for teachers downloaded from satellite, and locally-produced programming, including interactive workshops and principals' meetings. DCPS employs a Director of ITFS who oversees the Penn Center facility and coordinates the scheduled ITFS programming with the curriculum. Each educational program is part of a detailed lesson plan.

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[4] See the Declaration of Dr. Paul L. Vance, Superintendent of the District of Columbia Public Schools, attached as Exhibit 1.

[5] NITV's commercial wireless operator for its District of Columbia G-Group ITFS license, WHR-461, is CAI Wireless Systems, Inc. ("CAI"), now a subsidiary of WorldCom, Inc. ("WorldCom"). Construction and maintenance of NITV's transmitters, the point-to-point link from Penn Center to the transmitters and the receiving facilities at many of the schools were provided by CAI pursuant to its network sharing agreement with NITV. As in many of its partnerships with commercial operators, NITV is able to transmit educational programming using more channel capacity than is required by the FCC's rules.

Through NITV's educational affiliation with DCPS, a point-to-point microwave link has been licensed and installed between the Penn Center facility and NITV's transmitters, permitting the school system to produce and originate its own programming. The ability to produce and originate programming at the Penn Center has proven to be an invaluable resource. The school system regularly provides a series of administrator training programs to its principals and assistant principals over the ITFS channels, enabling those faculty members to take part in the training with minimal interference with their regular duties at the "home" school.

In December 1999, the school system was required to provide conflict resolution, multicultural education and diverse population teaching strategies training to every teacher and administrator in the system in connection with a civil rights compliance agreement. Rather than dedicating resources toward separate sessions in numerous locations, DCPS was able to provide the training to approximately 8,000 educators via the ITFS system. By using the ITFS channels, the school system was able to provide timely and cost-effective training, and a consistent message to all who participated.

NITV's affiliation with DCPS exemplifies NITV's use of its ITFS licenses in furtherance of its mission of providing educational technology to underserved youth in disadvantaged urban and rural areas. The District of Columbia is an urban school district, with many students identified as disadvantaged. The majority of students in the system qualify for free lunches due to their family's income level and are of diverse backgrounds. In this environment, curriculum enhancement, teacher development and staff training might be expected to take a back seat. With the benefit of its affiliation with NITV, however, DCPS is able to produce its own educational programs to be transmitted to the entire DCPS community, take advantage of quality educational programming from a variety of national sources and provide faculty training programs to its entire system at low cost. NITV's ITFS system has been an important aspect of

DCPS's technology planning since it went on the air in 1986 and has been an integral component of the five year DCPS Technology Plans since that time.

A number of additional collaborations between NITV and the school system have developed out of DCPS's use of the ITFS channels. In 1997, the District's Evans Middle School was the site of the first demonstration of the use of ITFS frequencies for K-12 educational Internet delivery. Officials of the FCC and U.S. Department of Education participated in this successful demonstration of the potential for wireless educational broadband services to meet the needs of local educators in inner city and rural areas. Moreover, through a grant from the Mobil Foundation, NITV and the school system collaborated to conform NITV's TeachersFirst website to the District's curriculum standards. Also, through a grant from the NEC Foundation, NITV and DCPS Vanguard special education teachers are expanding the resources available to teachers nationwide in the TeachersFirst section on exceptional children.

Examples of NITV's other local affiliations and successes in leveraging its ITFS frequencies to benefit education include the following:

- The Board of Cooperative Educational Services of Nassau County (New York) ("BOCES") uses NITV's ITFS channels to reach nearly 200,000 K-12 students in over 300 buildings in 56 schools with live programming from BOCES' own studios, satellite programming down linked on both C- and Ku-band dishes, curriculum programs on film and videotape from BOCES' media library of over 7,000 titles and distance learning offerings.

- Dade County (Florida) Public Schools has collaborated with Barry University, The Archdiocese of Miami, Miami Dade Community College and BellSouth to construct one of the first completely digitized multi-channel educational broadband systems in the nation. This ITFS system makes full use of the additional channel capacity created through the use of digital modulation technology. As a result, students and teachers in Dade County enjoy

access to one of the largest "on-demand" educational video scheduling services in the U.S. The "on-demand" system enables each individual teacher to assess the particular needs of his or her students at any time, immediately fashion an appropriate lesson plan to address those needs and instantly order educational programming to support his or her lesson plan for delivery into the classroom.

- Catonsville Community College (Baltimore, MD), the Maryland State Department of Education and NITV have formed a regional consortium to link community college locations, Baltimore County (K-12) and Baltimore Public Schools via ITFS with programming appropriate for each audience. The consortium recently completed construction of an analog video delivery system and is making plans to migrate to a digital two-way high speed broadband system, with the help of WorldCom.

- St. Bernard Parish Public Schools (New Orleans, Louisiana), is using locally-produced class instruction, faculty training, and public information programs distributed over NITV's ITFS system to highlight school services and activities. Curriculum-based courses are being provided from the VideoFirst library. The Portland (Oregon) Public Schools, the Milwaukee (Wisconsin) Public Schools, the Hillsborough County (Tampa, Florida) Public Schools and the White Settlement (Ft. Worth, Texas) Independent School District are other school systems working closely with NITV and making similar use of NITV's frequencies.

- Local educators in St. Louis, Pittsburgh, Atlanta, Kansas City (Missouri) and Saginaw (Michigan) are working with NITV to provide educational video services to students and teachers, with plans underway to transition these systems to digital two-way educational broadband services.

- Plans are also underway to integrate NITV's ITFS system into existing teacher training programs through NITV's local education affiliates in Philadelphia and Saginaw, Michigan.

In addition to providing distribution and content assistance to its education affiliates, NITV has facilitated the development of quality content for its ITFS systems with the John Curtis Affiliate Assistance Grant Program. Named after NITV's Founder, John Curtis, and entirely funded by NITV, this competitive grant program has provided financial assistance to local educators for the production of instructional and teacher training materials. The Dade County Public Schools, Milwaukee Public Schools and BOCES have been recipients of these grants.

NITV's effective utilization of spectrum has led to many benefits for local educators. NITV has fulfilled its mission through the use of its ITFS stations to help students and teachers. These efforts will continue as NITV transitions its services from analog to digital.

B. NITV's Partnerships With Commercial Wireless Operators

Distance-learning, educational broadband video and educational use of the Internet available from a single provider via the ITFS frequencies is not feasible without the partnership between ITFS and commercial fixed wireless operators established nearly twenty years ago when the FCC first permitted leasing of ITFS airtime.

After years of underfunding, NITV and the ITFS educational community as a whole are at last able to realize the full potential of instructional use of ITFS spectrum. Following the Commission's arduous and successful effort to reframe the FCC's ITFS and MDS rules to provide for two-way data utilization, NITV and numerous ITFS licenses have entered into agreements with sophisticated and well-funded communications providers able to provide high-speed wireless Internet access services through shared use of the ITFS and MDS frequencies.

Under these agreements, the educators receive substantial assistance from the commercial operators in providing ITFS channels in exchange for permitting commercial use of their frequencies pursuant to the FCC's rules. The shared use of ITFS and MDS capacity permits the operator to achieve a viable business in a competitive environment while affording educators access to state-of-the-art equipment and funding for distance-learning, wireless broadband services or other educational programs chosen by the educator. Without this partnership the commercial operator does not have the channel capacity to establish a viable competitive business. Without the provided equipment, maintenance services and revenues provided by the commercial operator, the educator cannot fulfill its educational mission.

The FCC has fostered the partnership between ITFS licensees and commercial wireless operators since 1983, when the Commission recognized that educational use of the ITFS frequencies could be enhanced through commercial leasing of a limited portion of ITFS airtime and adopted rules governing commercial use of the ITFS frequencies.[6] In the 1983 proceeding, the Commission also concluded that commercial operators required access to additional spectrum in order to build viable commercial services, deciding that the E- and F-Groups of ITFS channels should be re-allocated to MDS.[7] Again, in 1991, the Commission found that additional spectrum was needed to promote viable MDS services, at that time re-allocating 18 MHz of Operational-Fixed Service spectrum to MDS (Channels H1, H2 and H3).[8]

Over the years, Rules were developed in order to preserve the primary formal educational purpose of ITFS and ensure that ITFS licensees retained proper control and autonomy over their

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[6] *In the Matter of Amendment of Parts 2, 21, 74 and 94 of the Commission's Rules and Regulations in Regard to Frequency Allocation to the Instructional Television Fixed Service, the Multipoint Distribution Service and the Private Operational Fixed Microwave Service*, 94 FCC 2d 1203 (1983), *Memorandum Opinion and Order on Reconsideration*, 98 FCC 2d 129 (1984).

[7] *Id.*

[8] *Second Report and Order in Gen. Docket No. 90-54*, 6 FCC Rcd 6792, 6793-94, 6801-06 (1991), *recon. denied*, 7 FCC Rcd 5648,

stations.[9] For example, ITFS licensees are subject to minimum educational usage and absolute capacity reservation requirements, among other restrictions on their leases with commercial operators.[10]

The Commission also has fostered commercial operators' ability to ensure that use of ITFS capacity can be made without destructive interference. In 1991, in order to protect commercial services to consumers, ITFS "Protected Service Areas" were established requiring interference protection of a 15-mile radius circle around ITFS stations being utilized by commercial operators[11] (the ITFS PSA was expanded to 35 miles in 1995, and provided to all ITFS stations, regardless of commercial leasing status, in 1998).[12] In the early 1990's, the Commission also provided for the use of channel mapping and, later, channel loading technologies that permitted commercial operators to use leased ITFS airtime to serve consumers using entire channels rather than portions of such channels.[13] In 1996, the Commission authorized use of digital equipment by ITFS and MDS licensees, and later permitted use of the ITFS and MDS frequencies for the provision of Internet service.[14] The FCC's efforts to promote the ITFS and MDS partnership reached a pinnacle in 1998, when, prompted by developments in the fixed wireless industry and successful implementation of a number of digital wireless systems, the Commission authorized two-way licensing, as well as the channel shifting and

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[9] *See* 47 C.F.R. Sections 74.902 and 74.931.
[10] *Id.*
[11] *Amendment of Parts 21, 43, 74, 78 and 94 of the Commission's Rules Governing Use of the Frequencies in the 2.1 and 2.5 GHz Bands*, 6 FCC Rcd 6792 (1991) ("*Wireless Cable Reconsideration Order*").
[12] *Amendment of the Commission's Rules with Regard to Filing Procedures in the Multipoint Distribution Service and the Instructional Television Fixed Service*, 1 CR 1 (1995); *Amendment of Parts 21 and 74 to Enable Multipoint Distribution Service and Instructional Television Fixed Service Licensees to Engage in Fixed Two-Way Transmissions*, 13 FCC Rcd 19112 (1998), *recon.*, 14 FCC Rcd 12764 (1999), *further recon.*, 15 FCC Rcd 14566 (2000) ("*Two-Way Order*").
[13] *Wireless Cable Reconsideration Order*, 6 FCC Rcd at 6774; *ITFS Channel Loading Order*, 9 FCC Rcd 3360 (1994).
[14] *In the Matter of Request for Declaratory Ruling on the Use of Digital Modulation by Multipoint Distribution Service and Instructional Television Fixed Service Stations*, 11 FCC Rcd 18839 (1996); *Mass Media Bureau Implements Policy for Provision of Internet Service on MDS and Leased ITFS Frequencies*, 11 FCC Rcd 22419 (1996).

swapping of ITFS channels necessary to permit more efficient use of the spectrum in two-way systems.[15]

The educational opportunities provided now by ITFS, through partnerships with commercial operators, cannot be preserved by replacing the ITFS frequencies with other, higher frequencies or through advances in channel compression or wireline technologies. As discussed in greater detail below, the business case supporting the partnership between ITFS and commercial fixed wireless cannot be made when a higher frequency band is used.

In reliance on the newly-implemented two-way rules *as applied to the 2500 to 2690 MHz frequencies and using substantially all of the MDS channels and available ITFS airtime in each community*, experienced and well-funded telecommunications service providers such as Sprint Corporation ("Sprint") and WorldCom, Inc. ("WorldCom") together invested over two (2) billion dollars in purchasing MDS stations and acquiring rights to ITFS and MDS channel capacity.[16] Other operators with significant investments in ITFS and MDS channel capacity and operations include Nucentrix Broadband Networks, Inc. and IPWireless, Inc.[17] During 2000, these companies expended substantial resources designing broadband systems in cities and communities throughout the country, and proposing fixed wireless broadband facilities in FCC applications.[18]

As demonstrated by the FCC's own study, however, because of signal propagation characteristics above 3 GHz, these companies would be forced into a more expensive system

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[15] *Two-Way Order*, 13 FCC Rcd at 19112.
[16] *See* Comments of Sprint Corporation in RM-9911 and RM-9920, dated August 28, 2000, at 4; *Residential High-Speed Internet: Cable Modems, DSL and Fixed Wireless*, Keith Kennebeck, Jason Marcheck and James Mendelson, The Strategis Group Inc., January 2001, at 73.
[17] *Id.* at 70-76.
[18] *See Sprint Introduces New Broadband Wireless Service to Fresno's Residential and Small Business Customers*, News Release, Sprint Corporation, January 23, 2001; *Sprint to Launch First Broadband Wireless Service for Residential and Small Business Customers in Bay Area*, Sprint Corporation, October 24, 2000; *WorldCom Launches Fixed-Wireless High-Speed Internet Service in Memphis*, WorldCom, Inc., November 15, 2000; *WorldCom Seeks Broadband Fixed Wireless Authority*, WorldCom , Inc., August 14, 2000.

architecture in order to achieve their planned use of the frequencies.[19] Forcing ITFS/MDS onto fewer aggregated frequencies, relocation of the channels or disaggregation of the ITFS and MDS frequencies to a higher band would have the paradoxical effect of causing *less* efficient educational use of the frequencies. In essence, Sprint and WorldCom will no longer be able to design viable fixed broadband systems if spectrum above 3 GHz is used. Indeed, NITV understands from Sprint and WorldCom representatives that, because of the physical realities demonstrated in several studies, an ITFS spectrum re-allocation above 3 GHz would be "unacceptable."[20]

Undermining these partnerships and the financial and other support brought to bear by such companies would have drastic consequences on NITV's and the ITFS community's ability to provide their existing educational services, and would set back efforts to provide access to broadband educational services to schools, homes and businesses. As the Commission has recognized, ITFS educators need money, technical support and the ability to interest manufacturers in creating equipment, all of which are provided by the commercial operator pursuant to the ITFS/commercial operator partnership fostered by the Commission.[21] In short, re-allocation of the ITFS frequencies would eliminate essential and continuing financial and other support to ITFS licensees such that NITV and other educators would be forced to cease their educational technology services.

Without the ITFS/commercial wireless operator partnership, NITV's local school system affiliates could not easily replace NITV's wireless educational video services, as most schools

[19] FCC Staff Report Issued by the Office of Engineering and Technology, Mass Media Bureau, Wireless Telecommunications Bureau, and International Bureau, "Spectrum Study of the 2500 – 2690 MHz Band: The Potential for Accommodating Third Generation Mobile Systems," Interim Report, ET Docket No. 00-232, DA 00-2583, released November 15, 2000, at 61 ("*FCC Interim Report*"). *See also* George W. Harter, MSI, "Feasibility Study on Spectrum Sharing between Fixed Terrestrial Wireless Services and proposed Third Generation Mobile Services in the 2500-2690 MHz Bands," October, 2000 (Appendix 5.2 to *FCC Interim Report*).

[20] It is self-evident that the realities of signal propagation above 3 GHz would cause Sprint, WorldCom and other commercial wireless operators to re-evaluate their rollout of fixed broadband systems. *See* Note 19.

[21] NITV notes that volume purchasing drives lower prices. Educators have been able to take advantage of volume purchases only where there is a wireless operator also seeking equipment for commercial home installations.

generally are located away from major thoroughfares and outside of major commercial corridors, in areas in which capital-intensive expansions of DSL and cable lines are economically infeasible. In contrast, with the support of fixed wireless commercial partners, NITV and other ITFS licensees can install wireless services quickly and cheaply, especially in schools in disadvantaged and rural areas who are most in need.

The ITFS educators, commercial fixed wireless operators and the FCC have expended massive resources to promulgate rules to preserve the fullest educational use of the ITFS frequencies while ensuring efficient use of the spectrum by permitting commercial use of excess capacity and protecting the existing educational programs and educational wireless broadband capacity now available via the ITFS spectrum. It defies reason to suggest that the ITFS and MDS spectrum should be dislodged to provide additional spectrum for other advanced technologies whose applications have yet to be defined.

III. Disruption of the ITFS – Commercial Fixed Wireless Partnership Threatens the Future of American Education

Wireless broadband Internet access is an enormously powerful tool for American education that will be lost through segmentation or relocation of the ITFS frequencies, or disaggregation of the ITFS frequencies from MDS. Although the loss of existing educational services made possible through ITFS/commercial wireless partnerships is reason enough to preserve the current relationship and regulation of the ITFS and MDS spectrum, the Commission also should focus on the loss of future educational broadband services that would be caused by disruption of the ITFS and MDS service.

The Internet, with ubiquitous broadband streaming video and data transfer, will be the ultimate means of accomplishing NITV's mission of serving underserved youths without burdening taxpayers. NITV already has demonstrated two educational applications for the

Internet: 1) broadband distribution with its installation at Evans Middle School and, 2) content development with NITV's TeachersFirst teachers resource website. TeachersFirst is designed for K-12 classroom teachers and supported primarily by NITV, with additional corporate underwriters such as Lockheed Martin, General Dynamics, TRW, the Association of the United States Army, PSINet, the Mobil Foundation and the NEC Foundation. NITV collects teaching materials and lesson plans from around the world, and then asks teachers with classroom experience to review the collected materials before posting the resources on the website. NITV also provides a wealth of other resources aimed at classroom instruction and teaching issues. Sections are devoted to special education, professional development, state and federal education information, tips for new teachers, a web tutorial and "teachers' toolbox." TeachersFirst is the base from which NITV will add streaming video to existing content so that students and teachers may access quality resources on a wide scale. The TeachersFirst model is applicable to many areas of learning and school administration.

The power of the Internet to enhance learning has been substantiated by the Congressionally-appointed Web-Based Education Commission ("WBEC").[22] In its Report released in December 2000, the WBEC concludes that Internet-enabled education: (1) "center[s] learning around the student instead of the classroom;" (2) "focus[es] on the strengths and needs of individual learners"; and (3) "make[s] lifelong learning a practical reality."[23] WBEC calls for universal broadband access; high quality and continuous professional development and support for educators and administrators at all levels to facilitate use of educational technologies; and

[22] The bipartisan nature of WEBC's conclusions is reflected in the Bush Administration's recently-proposed education package. In its "No Child Left Behind" initiative, the Administration has stated that the use of educational technology should be fostered, with funds targeted to rural schools and schools serving high percentages of low-income students. *See* "Transforming the Federal Role in Education So That No Child is Left Behind," at http://www.whitehouse.gov/news/reports/no-child-left-behind.html.

[23] Report of the Web-Based Education Commission, "The Power of the Internet for Learning: Moving from Promise to Practice," December 2000 ("WBEC Report") at iii.

sustained funding that meets the challenge of learning transformation.[24] The wireless broadband services made possible through the ITFS/commercial wireless operator partnership will enhance learning in the very ways contemplated by the WBEC.

The WBEC concludes that the power of the Internet for learning is only as good as the power to reach everyone, especially those who are otherwise unserved, with cost-efficient Internet service. The WBEC was "told first hand that the Internet could result in greater divisions between those with access to the opportunities for web-based learning, and those without access."[25] Evidence presented in the Report clearly indicates that learners in the most disadvantaged areas may not have access to web-based learning, and the gap between the "haves" and "have-nots" is growing. For example, the WBEC found that between December 1998 and August 2000 the gap in Internet access between African American households and the national average grew from 15% to 18% and for Hispanic households the gap grew from 14% to 18%.[26] Although about a third of the U.S. population uses the Internet at home, only 18.9% of African Americans and 16.1% of Hispanics do so. [27] These statistics are alarming because 35% of U.S. children are members of minority groups, a figure that is expected to climb more than 50% by 2040.[28] One in five American children comes from a household headed by an immigrant and nearly one-fifth live in poverty.[29] In short, WBEC found that there is a "digital divide" in education and called for our government to "[m]ake powerful new Internet resources, especially broadband access, widely and equitably available and affordable for all learners."[30] This "divide" is access to broadband Internet service, and it will be drastically reduced through preservation of the ITFS/commercial wireless partnership.

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[24] WBEC Report at 128.
[25] WBEC Report at iii.
[26] WBEC Report at 25.
[27] *Id.*
[28] Olsen, Lynn, "Minority Groups to Emerge as Majority in U.S. Schools," *Education Week*, September 27, 2000, *cited in* WBEC Report.
[29] *Id.*
[30] WBEC Report at iii.

Fixed broadband wireless Internet access using the ITFS frequencies would ensure that that this powerful medium is available not only to schools but also to the homes of educators and students. Wireless broadband educational services can be installed quickly and cheaply in areas where DSL and cable are unavailable, for example, in inner city or rural locations where impoverished or otherwise unserved children live and go to school. In addition, unlike other sources of Internet access, ITFS is available now to provide traditional distance-learning and teacher training services. As illustrated by the TeachersFirst website, moreover, ITFS licensees are well-positioned to provide timely and high-quality professional and teacher resources to a widespread audience via the ITFS and MDS wireless broadband network. The ITFS/commercial wireless operator partnership also ensures that educators are provided with a continuous source of funding, including equipment upgrades and maintenance, supporting their use of educational broadband services.

It has been well-demonstrated that wireless broadband services using the ITFS and MDS frequencies are well-suited to serve areas where no high-speed access is available, as well as areas where there is little or no competition among broadband providers, and that its use will be widespread as the rollout continues. As noted in the Commission's most recent *Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services,* released in August:

> [ITFS/MDS] transmissions have a greater radius than upperband fixed wireless service, generally 35 miles versus three to five miles for upperband services. This is partly due to the fact that MMDS signals are less attenuated by rain and other severe weather conditions. MMDS's larger radius makes the service well-suited for not only residential customers, but customers in rural, underserved, and unserved areas as well.[31]

[31] *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Fifth Report*, FCC 00-289, Appendix E at 8, released August 18, 2000. *See also* "Deploying Broadband More Broadly: Working Together to Roll-out Access in America's Small Cities and Rural Areas," Remarks of Commissioner Gloria Tristani to the New Mexico Communications Network Symposium, Albuquerque, New Mexico, November 10, 1999, in which Commissioner Tristani notes that the cost-effective, wireless solutions offered by ITFS and MDS systems have the potential to provide broadband access to underserved markets.

The *FCC Interim Report* similarly states that "the growth of ITFS/MDS two-way service is intended to provide affordable service to those market sectors that are more likely to be underserved and provide a competitive choice to consumers in more urban and more affluent markets.[32] Market studies similarly reflect the demand for the broadband in unserved and underserved areas. As stated in the *FCC Interim Report*, approximately 10 million fixed wireless broadband subscribers are expected by 2005 and 70% of those subscribers will be served using the ITFS and MDS frequencies.[33]

IV. The Need for Additional Third Generation Spectrum Has Not Been Demonstrated, While Clear Demand Exists for Fixed Wireless Internet Services

As discussed in the *Notice*, the 2000 World Radiocommunications Conference ("WRC-2000") resolved that approximately 160 MHz of additional spectrum will be needed for IMT-2000 (typically known as 3G services[34]) by 2010, [35] but by no means requires constituent countries to allocate that much spectrum unless warranted. Events since WRC-2000 cast doubt upon the need for that much additional 3G spectrum in the U.S.

Existing allocations for First and Second Generation mobile services can be transitioned to more efficient spectrum usage. Sprint PCS, for example, has stated that it will use its existing PCS spectrum to deploy 3G technologies over its CDMA network.[36] Sprint PCS also has announced partnerships with a number of companies to provide 3G mobile wireless Internet access via handheld operating systems.[37] AT&T Wireless also has committed to providing 3G

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[32] *FCC Interim Report* at 22-23.

[33] *FCC Interim Report* at 22, *citing* Smith, "Wireless Rides to the Rescue," *Wireless Week*, February 7, 2000, at 16; *see also FCC Interim Report* at Note 27.

[34] The primary features of IMT-2000 systems defined by the International Telecommunications Union are: (1) high degree of commonality of design worldwide; (2) fixed networks; (3) high quality; (4) use of small pocket-terminal with worldwide roaming capability; and (5) capability for multimedia applications, and a wide range of services and terminals. *FCC Interim Report* at 6.

[35] *Notice* at paragraph 4.

[36] *See Sprint Announces Definitive Agreement with AT & T Wireless to Exchange Certain Blocks of PCS Spectrum*, News Release, Sprint PCS, November 3, 2000.

[37] *See, e.g., Sprint, Palm Alliance to Unleash CDMA Wireless Internet Access on Handheld Computers*, News Release, Sprint PCS, January 4, 2001; *Sprint Works With Sabre and Travelocity to Provide Travel Tools for Customers on the Go Via The Sprint Wireless Web*, News Release, Sprint PCS, January 31, 2001.

services using its existing spectrum.[38] It has begun a strategic partnership with NTT DoCoMo, the mobile communications company known for its successful deployment of the "I-Mode" mobile Internet service in Japan and has announced agreements with equipment suppliers Ericsson, Lucent Technologies and Nokia in support of its evolution to 3G services.[39]

The aftermath of recent auctions of 3G spectrum in Europe have added to concerns that an auction of 3G spectrum in the U.S. may result in new revenues for the treasury but otherwise fail to promote the near-term availability of advanced services. Although several auctions for 3G licenses in Europe have received attention because of the high prices firms paid for licenses, these high prices may undermine the ultimate success of the bidders. Auctions in Germany and the U.K. during 2000, for example, yielded $46 and $35 billion respectively, or over $500 per capita.[40] However, as discussed in a recent report released by the Council of Economic Advisers, bidders in the German and U.K. auctions such as Deutsche Telekom and France Telecom have experienced a drop in their credit ratings that are linked to the apparently over-inflated prices paid in spectrum auctions and reflect weakening investor confidence in 3G systems.[41]

The Council of Economic Advisers suggests that 3G services may be less popular here in the U.S. because our prices for typical Internet services are substantially lower than in other countries.[42] A number of others believe that consumer demand for 3G services, especially demand in the U.S., is likely to be weaker than initially expected because the incremental improvement between the 2.5G services available now and 3G will not matter to consumers.[43]

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[38] *See* Theresa Foley, "AT & T Wireless 3G Bid Opens the U.S. Market to GSM," *Communications Week International*, December 18, 2000.

[39] *See AT & T Wireless and NTT DoCoMo Commence Strategic Wireless Alliance*, New Release, AT &T, January 22, 2001; *Ericsson Teams Up with AT & T Wireless to Expand Mobile Internet Services Nationwide*, News Release, AT & T Wireless, November 30, 2001; *Lucent Technologies Named Major Supplier of 3rd Generation Equipment for AT & T Network*, News Release, AT & T Wireless, November 30, 2001; *Nokia and AT & T Wireless Join to Change the Landscape of Wireless in North America*, News Release, AT & T Wireless, November 30, 2001.

[40] *The Economic Impact of Third-Generation Wireless Technology*, A Report by The Council of Economic Advisers, October 2000, at 8. The German and U.K. auctions involved unencumbered spectrum, whereas a U.S. auction of 3 G frequencies would involve relocation of numerous incumbents. *Id.* at 10.

[41] *Id.* at 10.

[42] *Id.*

[43] See, e.g., "Morphing I-Mode Phones to Upstage 3G Debut", *Yahoo News*, December 27, 2000; Dan Briody, "Wireless Watch: Is 3G Worth the Extra Gs?" *Red Herring*, December 27, 2000.

Even if the Commission concludes that 160 MHz is required for "advanced wireless services" in the U.S., that amount of spectrum already has been made available for such services. As discussed in the *Notice*, there is approximately 70 MHz of spectrum in the 1850 - 1910, 1930 - 1990 and 746 - 806 MHz bands that has yet to be auctioned in many areas and could be used for advances wireless systems.[44] Similarly, the FCC proposes that the 1710-1755 MHz band (45 MHz) be allocated for mobile and fixes services, including new advanced systems.[45] Finally, as discussed in the *Notice*, Congress has mandated that the 2110-2150 MHz band be reallocated to private use and assigned through competitive bidding by September 30, 2002.[46] The Commission proposes that this band, plus 2160-2165 MHz,[47] for a total of 45 MHz, be designated for advanced mobile and fixed communications services.[48]

WRC-2000 identified several spectrum bands for potential terrestrial 3G services,[49] concluding that each country should evaluate possibilities for global harmonization by considering "harmonized frequency arrangements for the implementation of IMT-2000 . . . that take into account the services currently using the bands or planning to use the bands . . . ."[50] Thus, although the U.S. has committed to a feasibility study of the 2500-2690 MHz band, there is no requirement that the U.S. allocate any of these bands for 3G services.[51]

Given this flexibility, if the Commission were to decide that additional spectrum should be allocated, it should look to Mexico and Canada for frequencies that enable international roaming. As discussed in the *Notice*, the 1755 MHz through 1850 MHz band is the likely choice of Mexico, Canada and other Western Hemisphere countries, while 2500 through 2690 MHz is

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[44] *Notice* at paragraph 34.
[45] *Notice* at paragraph 41.
[46] *Notice* at paragraph 50.
[47] Pursuant to Section 21.901 of the Commission's rules, the 2160-2162 MHz segment is used for a portion of Channel MDS-2 in the top 50 U.S. markets. Given that MDS Channels 1, 2 and 2A are used as the initial upstream frequencies and therefore are critical components of fixed two-way wireless systems being rolled out by ITFS and MDS licensees across the country, existing operations on 2160-2162 MHz should be grandfathered, or those frequencies used for 3G services only outside the top 50 markets.
[48] *Notice* at paragraph 50.
[49] *Notice* at paragraph 4.
[50] Provisional Final Acts of World Radio Telecommunications Conference (Istanbul, 2000), Resolution [COM5/26] (WRC-2000) at 5.
[51] *See FCC Interim Report* at 12.

unlikely to be available for 3G in those countries.[52] Accordingly, those frequencies would best promote harmonization where it is needed.

Travel and trade statistics demonstrate that roaming capability in North America is more important than harmonization elsewhere. Statistics for 1999 recently released by the U.S. Department of Commerce indicate that approximately 60% of foreign trips by U.S. residents are to Canada and Mexico. Only 22% of foreign trips are to the U.K., France, Italy, the Netherlands and Spain and less than 7% are trips to Japan, Hong Kong, Korea, China and Taiwan.[53] According to 1999 figures, Canadians and Mexicans account for 49.5% of trips to the U.S. by citizens of other nations, similarly demonstrating the need for harmonization with Canada and Mexico.[54] Foreign trade statistics for 1999 further demonstrate the importance of coordination with North American countries. Canada and Mexico are the number one and number two trading partners of the U.S., generating 34% of the U.S.'s total foreign trade value.[55] In contrast, Germany, the U.K. and France together generate 12.3% of total foreign trade, while Japan, China, Taiwan, Korea and Singapore together generate less than 26% of total foreign trade.[56]

Furthermore, the impending development of software defined radio technologies will eventually negate the need for worldwide harmonization. Software defined radios ("SDRs") are tuned to the appropriate frequency using software in high-speed digital signal processors, enabling such radios to be quickly reprogrammed to transmit and receive on multiple frequencies in different transmission formats. SDRs will permit travelers to change frequencies in order to use the local wireless system, obviating the need for global coordination of frequency use.[57] The FCC already has proposed to streamline its processing of changes in radio transmitters in order to accomodate SDRs.[58]

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[52] *Notice* at Note 47.
[53] *Select Destinations Visited by U.S. Resident Travelers 1998-1999*, U.S. Commerce Department (October 2000).
[54] *International Arrivals to the U.S. – Historical Visitation 1993-1999*, U.S. Commerce Department (April 2000).
[55] *Top 50 Partners in Total U.S. Trade in 1999*, U.S. Commerce Department (July 2000).
[56] *Id.*
[57] *See Inquiry Regarding Software Defined Radios, Notice of Proposed Rulemaking*, ET 00-47, released December 8, 2000 ("*SDR Notice*"); *see also Inquiry Regarding Software Defined Radio, Notice of Inquiry*, released March 21, 2000.
[58] *See SDR Notice* at paragraphs 19 and 20.

Given the availability of *additional* spectrum for 3G and the ability to utilize existing allocations more efficiently, the need to sacrifice current and planned educational and commercial use of ITFS and MDS spectrum must be questioned. Dramatic expansion and enhancement of services are occurring in the 2.5 GHz band because of the new rules that ITFS and MDS licensees and their wireless operators sought in order to make the spectrum more efficient and provide a service demanded by consumers. Clearly, the existing traditional educational video services and burgeoning high-speed wireless broadband services on the 2500 through 2690 MHz band should not and cannot be displaced, in circumstances where the need for this band's allocation for 3G services cannot be demonstrated. If it is decided that additional spectrum must be made available for 3G services, there are frequencies already designated by the Commission that may be reallocated for 3G services without destroying the substantial existing educational uses of the 2500-2690 MHz band and the widespread wireless broadband services that will soon be provided.

V. Conclusion

NITV is deeply disturbed that at a time when wireless broadband access is poised to be deployed to enhance the power of the Internet to serve education, the FCC is compelled to consider whether other spectrum or means can be used to meet this overwhelming need. In doing so, the FCC also puts at great risk the ability of commercial operators to support education and deliver services to underserved areas and in competition with incumbent providers. NITV urges the FCC to act quickly to designate other spectrum for 3G services clearing the way for ITFS licensees and commercial operators to continue to roll out advanced fixed wireless services in the ITFS and MDS band.

Respectfully submitted,

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